MODULE B MEMORY AND STORAGE · B5

Choosing storage: mark scheme

~25 minutes · 21 marks · 0478 syllabus 3.3.3

How to use. "Any N from" means award 1 mark per valid point up to N. **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. Mark positively; credit any other valid answer.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) 0478 3.3.3	HDD: magnetic SD card: solid state Blu-ray disc: optical USB flash drive: solid state DVD: optical	**5**	1 mark per row. More than one tick in a row = 0 for that row.
2(a) 0478 3.3.3	Solid state // flash memory	**1**	Accept SSD / memory card. Do not accept a device that is not solid state.
2(b) 0478 3.3.3	Any three from: It has no moving parts It stores data using transistors // NAND/NOR flash // control gates and floating gates Data is stored electronically // as trapped charge (not by mechanical parts) So it is not damaged when the device is dropped / shaken in the van // it is durable/robust It is small/light, so it fits in a handheld device It is non-volatile, so delivery records are kept when the device is switched off	**3**	max 3. Award 2 at most if no reference to how solid state works (no moving parts / transistors / gates / flash).
3(a) 0478 3.3.3	Any three from: Data is stored on (spinning) platters Platters are divided into tracks and sectors A read/write head moves (on an arm) across the platter Electromagnets are used to read/write data By magnetising areas of the surface (to represent 1s and 0s)	**3**	max 3. Do not accept lasers or pits/lands (optical).

QUESTION	ANSWER	MARKS	GUIDANCE
3(b) 0478 3.3.3	Any two from: High/large capacity // can store a very large number of photographs Low cost per unit of storage // cheaper per gigabyte than solid state The drive is not moved, so its moving parts are unlikely to be damaged Non-volatile // keeps the archive when power is off Suitable for long-term storage // reliable	**2**	max 2. "Cheap" alone: accept as BOD only if linked to large amounts of data.
4(a) 0478 3.3.3	laser pits lands	**3**	Pits and lands in either order. Accept "laser beam".
4(b) 0478 3.3.3	Any two from: Discs are cheap to produce in large numbers // low cost for 200 copies Light/thin/small, so cheap and easy to post Enough capacity to hold a film // Blu-ray has a large capacity (for an optical disc) Read-only disc, so the film cannot be changed/deleted (accidentally) Reviewers can play it in a standard disc player/drive	**2**	max 2. Do not accept "durable" (optical discs scratch easily).
5(a) 0478 3.3.3	Any two from: Magnetic storage has moving parts // the platter must spin and the read/write head must move to the right place Which takes time // causes a delay before data can be read Solid state has no moving parts // data is accessed electronically (using transistors) So data can be read/written almost immediately	**2**	max 2. "Solid state is faster" alone = 0 (repeats the question).

Total: 21 marks